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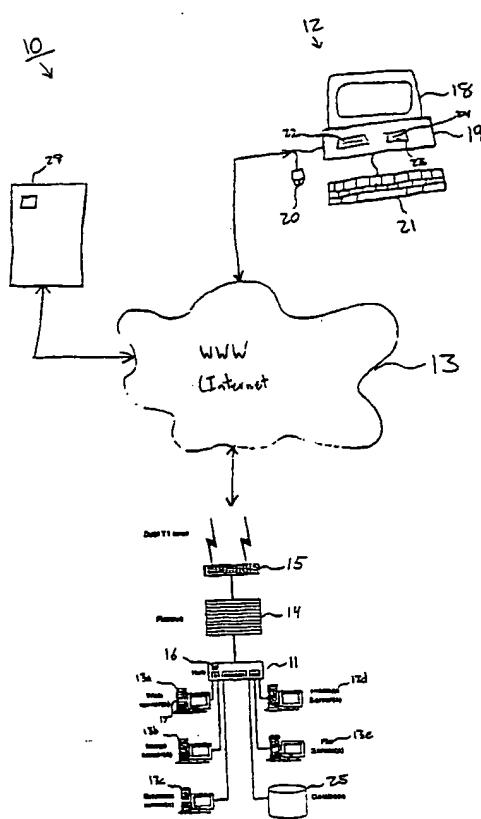
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(54) Title: ONE-CLICK PRINTING SYSTEM AND METHOD



(57) Abstract: A user of an electronic printing system in accordance with the invention may select information, such as electronic images, audio-visual information, graphical information, or the like from a remote server (28) for printing on a selectable print medium. A user (12) may choose an image to be printed on a selected print medium by selecting from a set of design templates to create a custom print design. Such custom print designs may be provided to a remote or local printer for printing. Upon a user (12) creating a custom print design, the electronic printing system may store the custom design information until an order is placed by the user. Design file(s) may describe the initial layout of a print design and may reflect updates to the initial layout based upon the custom design created by a user.

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ONE-CLICK PRINTING SYSTEM AND METHOD

The present invention relates to electronic printing systems, and more specifically to an electronic printing system and method for printing of images using a simple user interface.

BACKGROUND OF THE INVENTION

A variety of software applications are available that allow for the creation of several types of printed documents, such as business and greeting cards, stationery and slides. Some applications allow for the printing of such documents on a conventional printer, such as may be found in a home or an office environment.

However, for certain types of printable media that require high quality printing, or if a large volume of documents is desired to be printed, then the services of a printing facility are required. Often, such facilities contain a variety of specialized printing machinery to facilitate the printing of large volumes of printed products onto a variety of different printable media including plain paper, preprinted paper, business cards, and stationery. In addition, such printing facilities may have the capability to print onto physical objects, such as cloth T-shirts, caps and coffee mugs.

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While software application programs, such as those mentioned above, enable the creation of printable documents and local printing of those documents, they lack the mechanisms to allow for the electronic transfer of the documents to the necessary printing facility. With these typical software programs, the transfer of information necessary for the printing of the document is carried out either by storing the document to a transportable storage medium, such as a floppy disk, or by printing the document onto paper by use of a local printer and having the information reentered and formatted

in a system at the printing facility. In either case, the transfer of information is both time consuming and burdensome.

- Some software applications, such as remote print kiosks, allow for the
- 5 electronic transfer of documents to a printing facility but are limited in the types of documents that may be created and transmitted. While such programs may enable the creation and transmission of one type of document, such as stationery, they are incapable of the creation and transmission of other types of documents, such as those documents to be placed on mugs, golf balls, T-shirts, etc. In addition, certain print
- 10 mediums, such as Post-it® Notes and golf balls, are generally not available for low quantity custom print jobs.

Therefore, there is a need in the art for an electronic printing system in which print orders may be designed and transmitted electronically to a remote or local printer facility so as to be printed remotely or locally in accordance with the order request, regardless of the desired print medium. Further, it is desirable to provide an electronic printing system in which the design tool and remote or local printing facilities are integrated into a seamless environment. It is to these ends that the present invention is directed.

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SUMMARY OF THE INVENTION

A user of an electronic printing system in accordance with the invention may create custom information, such as audio-visual information, graphical information, textual information or the like, on a remote server. A user may select from the custom

25 information to be printed on a selected print medium by selecting from a predetermined set of design templates to create a custom print design. Such custom print designs may be provided to a remote or local printer for printing. Upon a user

creating a custom print design, the electronic printing system may store the custom design information until an order is placed by the user. Every order may have an order file and one or more associated design files (for example, multiple items in an order). It should be noted that the design files are not limited to computer files but could be objects and other design structures. The design file(s) may describe the initial layout of a print design and may reflect updates to the initial layout based upon the custom design created by a user. Imaging engines resident on the remote servers of the electronic printing system may convert the information in the design file(s) into a graphic file for on-screen representation as well as a "ready-to-print" output file that may be retrieved electronically by a remote or local printer facility. The order files may contain user information and product data, such as a user's billing and shipping address, payment information, the type of media type desired and the ink types and print qualities desired. When an order is submitted, it is staged for conversion. Both the design files and the order files may be converted to printer specific files that may be retrieved electronically by a remote printing facility. The user's order may be carried out by the printing facility and may be sent to the user when completed.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic diagram of an electronic printing system network in accordance with the invention;

Fig. 2 is an example of a screen shot of a web page that includes an electronic image that can be printed on a print medium in accordance with the invention;

Fig. 3 is another example of a screen shot of the web page shown in Fig. 2 in which print medium choices are selectable;

Fig. 4 is an example of a screen shot of a web page that is displayed to a user of the electronic printing system of Fig. 1 showing the design tool module that allows for customization of a print design in accordance with the invention;

Fig. 5 is a flowchart showing the operational flow of the electronic printing system in accordance with the invention;

Fig. 6 is a flowchart showing an alternative embodiment of the operational flow of the electronic printing system in accordance with the invention;

5 Fig. 7 is a flowchart illustrating the operational flow of the electronic printing system when an order has been submitted for processing by the electronic printing system;

Fig. 8 is a flowchart illustrating the operational flow of the process server of the electronic printing system; and

10 Fig. 9 is a flowchart illustrating the operational flow of the backend module of the process server.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Fig. 1 shows a schematic diagram of an electronic printing system network 10 in accordance with the invention. A system 10 may include a remote server hub 11 connected with one or more clients 12 across a wide area network (WAN) 13, such as the Internet, or more particularly, the World Wide Web. It should be noted that while the electronic printing system 10 may be provided over the World Wide Web it may also be provided on stand-alone computer systems, intranets, etc. The server hub 11 may be connected to the Internet 13, for example, through a protected firewall 14 and dual T1 lines 15. The server hub 11 may contain one or more pieces of software code 16 that may be stored on various servers 13a-e, either local to or remote from the server hub 11. The software code 16 may be accessible to each server 13a-e via the server hub 11, and may be executed by microprocessors 17 in the servers 13a-e in order to operate as the electronic printing system 10. The Internet permits the servers 13a-e, when accessed by an individual client 12, to display a web page on the client's 12 computer which permits the client 12 to interact with the servers 13a-e. The individual servers 13a-e may include one or more web servers 13a, one or more image

servers 13b, one or more graphics servers 13c, one or more process servers 13d, and one or more file servers 13e. The function and interrelationship of these servers 13a-e will be described in detail herein.

- 5 The client computer system 12 may include a display device 18, a chassis 19, and one or more user input devices, such as a mouse 20 and a keyboard 21. The chassis 19 may house a permanent storage system 22, such as a hard disk drive, optical disk drive, tape drive, or the like, which may store one or more software applications such as a web browser application. The client 12 computer system may have a
10 memory 23 resident therein and the software application from the disk may be transferred to the memory 23 to be executed by a CPU 24. The browser application may be configured to connect the client 12 to the server hub 11 over the WAN 13 and receive graphical information (web pages) that may be displayed on the display device 18 to the user. The browser application may also permit the client 12 to interact with
15 the servers 13a-e, such as for selecting information, such as images, to be provided to the one or more image servers 13b integrated with a design template and for editing the electronic printing templates in a database(s) 25 that may reside on the remote servers 13a-e in accordance with the invention.
- 20 The database(s) 25 may include a large number of records, which may be accessed by the various servers 13a-e. For example, the database(s) 25 may include records pertaining to customer personal information, such as shipping information. The database(s) 25 may also include records pertaining to customer billing information, order histories, order status, pricing information, sales tax information,
25 printer information and printer attributes, such as which printer plant may be best utilized for a printing product based, in part, on customer location. Additionally, the database(s) 25 may include store attributes, product attributes, shipping carriers, options, and costs, and printer-specific information, such as ink colors and media type.

It should be understood that the database(s) 25 may include additional record information that has not been described here, and is not limited to the records set forth herein.

- 5 In accordance with the invention, a user at the client 12 may create information, including electronic images, audio-visual information, graphical information, or the like. While information of any format type can be utilized by the present invention for printing of the information on a selectable print medium, the invention will be described in the context of printing user created electronic images, such as pictures.
- 10 However, the invention is not intended to be limited to such an embodiment.

In an embodiment of the invention, a user at the client 12 may create custom information, such as electronic images, for example pictures, that may be electronically scanned into, or originally generated in, a digital format, such as JPEG, 15 GIF, TIFF, etc., and stored in a database either on the client system 12 or uploaded to a remote server 28 and stored thereon. The remote server 28 that stores a user's created information, such as electronic images, audio-visual information, graphical information, or the like, may be remote from the server hub 11 in accordance with the invention. Fig. 2 shows an example of a screen shot 30 of an electronic image 40 20 created on the remote server 28 that is displayed to the user of a client system 12. A user of a client system 12 in communication with the remote server 28 can view the images contained thereon and in accordance with the invention can select from additional images contained on the remote server 28 for printing on a selectable print medium, for example a T-shirt or a coffee mug.

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As shown in Fig. 2, the web page displayed to the user of a client 12 in communication with the remote server 28 may include both the electronic image 40

and textual information describing the image 40. Typically, the images shown could be thumbnail images (small image renditions of the picture) or larger scale images.

In accordance with the invention, the user may choose to print the selected
5 image 40 on a print medium, for example, on a T-shirt or a coffee mug. It should be noted that certain print mediums may not be available for printing of the image depending on, for example, the resolution quality of the image. Some images may not render well on very large print mediums, such as T-shirts, because their associated resolution may be poor. In such a case, the user would not be able to select that print
10 medium to print the image, but may select other available print mediums for printing the image.

Fig. 3 shows an example of a screen shot of the print medium selection choices available to the user for printing the image shown in Fig. 2. In Figure 3, a menu 50,
15 such as a drop-down menu, associated with the image may be presented to the user that may include the available printing templates of the print mediums that the image can be printed on. Of course, other conventional means of providing selectable choices to the user can be practiced.

20 In Fig. 3, available printing templates may include a mousepad, a T-shirt, a greeting card, a baseball cap, a coffee mug, a wall clock, a photograph, a business card, etc. It should be noted that these print mediums and the embodiment in which they are selectable are described merely for illustrative purposes and are not intended to be limiting.

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When a user selects an image from the remote server 28, textual information, such as keyword information that is found in a design, for example the keyword "EMAIL" together with the contextual e-mail message address information, from the

remote server 28 can be passed to the web server(s) 13a of the electronic printing system 10. Similarly, regarding an image resident on the remote server 28, location information can be passed to the image server(s) 13b and the image server(s) 13b can use this location information to retrieve the image from the remote server 28. It should
5 be noted that additional information can be passed between the remote server 28 and the electronic printing system 10, such as design information and product information. In accordance with the invention, once the user chooses one of the available print mediums, the selected image stored on the remote server 28 is provided to the image server(s) 13b of the electronic printing system 10, either directly or via location
10 information so the image 40 can be retrieved by the image server(s) 13b from the remote server 28, so that the user may customize the print design. Customization may be made available to the user via a design studio software module of the electronic printing system 10 that may be displayed to the user via the web server(s) 13a. Fig. 4 shows a screen shot 35 of the design studio interface available to the user in a case
15 where the user has chosen to place a selected image on a T-shirt. As shown, the user may customize the print design by editing the text, graphics, colors, fonts, size, etc. It should be noted that the customization attributes may be different depending upon the print medium design template and the image being customized for printing on the medium. When the user has finished customizing the image, the user may choose to
20 submit the image for printing by the electronic printing system 10 in accordance with the invention.

Upon the user choosing and editing a custom print design, as described above, the electronic printing system 10 may store the design information until an order is placed. Every order may have an order file and one or more associated design files.
25 The design files may describe the initial layout of a print design, for example, the generic print medium template selected by the user, and may reflect updates to the initial layout based upon the custom design made by the user. An imaging engine

(resident on an image server 13b) may convert the information in the design files into a graphic file for on-screen representation and a process server 13d may convert the design files into a "ready-to-print" output file that may be retrieved electronically by a remote printer facility. The order file may contain user information and product data,

5 such as a user's billing and shipping address, payment information, and the media type desired. When an order is submitted, both the order file and the design files may be staged for conversion. These files may be converted to printer specific files and may be retrieved electronically by a remote printing facility and the user's order may be carried out by the printing facility and may be sent to the user when completed.

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In order to fully appreciate the invention, custom design of images for printing will be described. Returning to Fig. 4, the design template for a T-shirt is shown. Depending on the user selection of print medium, other design templates, such as a coffee mug, may be shown, however, the custom design principles are similar between

15 design templates and those described herein may be applicable to other design templates as well.

Generally, every print item, such as a business card, a T-shirt, a mug, etc., has associated design files, per side, that describes the design layout. The design files may

20 be structured textual document files that describe the initial layout of the design item, the placement of objects in the design item, and attributes of those objects. As a user modifies a default design file for a print order by entering text, moving or coloring an object, new design files are created by the system 10 to reflect the modifications to the default design layout which are then be sent to the image server to create a new image

25 that is displayed to the user reflecting the modifications. Therefore, in accordance with the invention, the user may make changes to the design templates to customize the print design. Such changes are updated in real-time and displayed to the user.

A design file typically contains a textual description of elements in a layout of any custom design. The size of the medium, any textual, graphical and line objects to be associated with the design, for example, font preferences and colors, may be reflected as textual design elements in the design files. However, it should be noted 5 that the design elements are not limited to these attributes and may include any product attributes. For example, the color of the design object, the alignment and the spacing of design elements on the print design may be defined in the design file.

The types of design elements available in a custom print design may vary 10 depending upon the print medium. In the context of a coffee mug, for example, the available design elements may include graphics, colors and text. It should be noted that the number of design elements that may be included in design files is unlimited. The required attributes for a design element may vary depending on the object. Typically, the attributes may define an object, the position of the object on the design, 15 its style elements, and its size.

The image server 13b functions to reflect, in real time, the changes made to the custom design template. For example, the image server 13b parses the textual information included in the design files and returns a graphical image 41c (stored on 20 the graphics server 13c) representative of the design described by the design files to be displayed to the user in real-time. The image server 13b may convert the textual information into a GIF graphic, or any other graphic file, that is a screen representation of the layout of the custom design. Therefore, a user is able to immediately visualize the changes and modifications that are made to a custom design before submitting the 25 design for processing and remote or local printing.

As described above, font size, style and other attributes may be defined for a text-based design element in the design file. The spacing above and below the actual

text of the text design element may be specified so that lines of text do not overlap when printed on a custom design. Typically, the text offset may be calculated automatically by the image server 13b as a user modifies the text attributes or when a graphical representation of the design file is redrawn on a display screen in accordance
5 with user modifications. Generally, the spacing depends on the font style and size.

The placement of textual information on a print design, such as a coffee mug, may also be defined in the design file. The moving alignment (justification), the placement of objects and the overlapping of objects may be defined by establishing placement boxes. Further, the alignment and the spacing of the textual object within
10 the previously defined boxes may be defined in the design file.

Placement boxes, such as a movement control box normally defines the borders of a move area within the design area. Alternatively, the box can define a more specific area for the placement of objects within the custom design area. The image server 13b uses the box coordinate information to determine the precise coordinates of
15 an object on the design area. By defining a placement box, the user can easily adjust the placement of an object within the custom design. Therefore, the design studio may allow for precise control of alignment of objects in a custom design. In addition, positioning boxes may be defined so as to allow a user to accurately position a design element 41. Thus, the design studio provides a user with unique placement options
20 within a custom design.

The operation of the network system 10 will now be described in detail with reference to the various servers 13a-e. In accordance with the invention, a remote server 28 accessible by a user of a client system 12 may store information, such as electronic images, audio-visual information, graphical information, and the like,
25 thereon that are selectable by the user for printing on a selectable print medium. Upon

selecting from the information to be printed and the print medium on which the information is to be printed, the information is passed from the remote server 28 to a server(s) 13b of the printing system 10. For example, in the case of the user selecting an electronic image for printing, the image is passed from the remote server 28 to the 5 image server(s) 13b of the printing system 10. The user may be provided, via the web server 13a, with an interactive design tool so that the user may customize a print design. The web server 13a may be configured to retrieve the custom design information input by the user and may create and update design files accordingly. The web server 13a may also be configured to initiate a billing procedure, such as a pre- 10 authorization procedure.

The following operation of the printing system 10 will be described in the context of a user selecting an electronic image for printing on a print medium, however, the invention is not limited to such an embodiment and any information, such 15 as electronic images, audio-visual information, graphical information, and the like, can be selected by the user for printing. When a user (client 12) customizes a print design, graphics information may be obtained from the graphics storage location (the graphics may be stored on the image server, the file server, or any server capable of storing image data) and may be conveyed to an image server 13b so that the graphics 20 information may be parsed into image files that may be displayed to a user via the browser interface to reflect user modifications to an initial design.

Fig. 5 is a flowchart illustrating the operation flow of the electronic printing system 10 (see Fig. 1). In accordance with an embodiment of the invention, a user 25 may select information, such as electronic images, textual information, audio-visual information, graphical information and the like from a remote server 28, for printing of the selected information on a selectable print medium (Step 50). For example, a remote server 28 may have stored therein a plurality of electronic images, for example

photographic pictures. The user may select from the information stored on the remote server 28, for example an image that the user would like to print on a print medium, such as a coffee mug or a T-shirt, and may select a print medium for printing the selected information (Step 51). The selected information, such as an electronic image, 5 may be passed to a web server(s) 13a of the electronic printing system 10 (Step 52) and a default design file for the selected design product, such as a generic coffee mug template, is opened and the web server(s) 13a may initiate the creation of a new item in an order with the selected information (Step 53). The design options that are presented to a user may be dependent on the design rules located in the database(s) 25. The 10 generic design information may be passed to the image server (Step 54), where the information may be parsed (Step 55) and rendered as an image file (Step 56) and returned to the web server 13a (Step 57) and downloaded by the user for display to the user through the user interface (Step 58). When downloaded by the user for display, a design tool interface 30 (see Fig. 4) may be displayed to the user through the browser 15 interface allowing the user to modify the design file accordingly. The edits are reflected in real-time so that the most current design file is shown to the user via the display.

The image server 13b may include a graphics conversion program that parses 20 textual information (from design files) into graphical images so that the web server 13a can convey these graphical images to the user through the browser interface 30 in real time. Thus, every time a user modifies a design by modifying design files, the web server 13a updates the design information and passes that information to the image server 13b. The image server 13b parses the textual information, renders a graphical 25 image reflecting the design update, and returns the graphical image to the web server 13a so that it is displayed to the user through the browser interface.

In the electronic printing system 10, there may be multiple image servers 13b and multiple web servers connected to the server hub 11. In such case, data traffic between the web server 13a and the image servers 13b may be controlled by a traffic broker. The traffic broker may receive information from the web server 13a,

5 determine which of the plurality of image servers 13b may presently be able to handle the task due to a light information load, and may pass the textual information to that image server 13b so that the information may be parsed into a graphical image file, at which time the traffic broker may return the graphical image to the requesting web server 13a. Upon finishing a custom design order, the user submits the design order to

10 the electronic printing system 10 for processing.

Fig. 6 illustrates another embodiment of the operation flow (shown in Fig. 5) of the electronic printing system 10 of the invention (Fig. 1). In Fig. 6, like process steps are represented by like reference numbers and need not be explained. The differences between the operation flow shown in the alternative embodiment include passing the

15 information from the remote server 28 to the "front door" of the electronic printing system 10 and storing the passed information therein (Step 52a). By storing the information at the front door of the electronic printing system 10, a customer, for example, can select a product, such as a print medium, from the electronic printing system 10 and modify a design such as size, layout, etc., as described herein. During

20 modification of the design, the information passed from the remote server 28 can be added to the design.

Additionally, when updating the design file and passing the information to the image server(s) 13b (Step 54a), additional information can be "grabbed" from the

25 remote server 28. For example, location information of an image resident on the remote server 28 can be provided to the electronic printing system 10 and the system 10 can use this location information to retrieve the image from the remote server 28. Alternatively, textual information, such as keyword information can be provided to the

electronic printing system 10 and this information can be included in the print design, without requiring the electronic printing system 10 from requesting additional information from the remote server 28.

5 Fig. 7 is a flowchart illustrating the operational flow of the electronic printing system 10 when a user submits a custom design for printing by the electronic printing system 10. When submitted, an order file may be created that may include information pertaining to pricing, shipping and billing information. This information may be retrieved to process an order (Step 60). During creation, the web server 13a may check
10 the order files to ensure that the billing and the shipping information is correct, that payment information, such as credit card billing information, is valid (Step 61) and provided that all order information is correct, may assign a print facility that can handle the order by line item information in the order file (Step 62). If the information is not correct, the system 10 may request additional information to complete the billing
15 and shipping information.

After assigning a print facility (Step 62) the system 10 may get billing information from the order file (Step 63). The system may then check whether the billing information is correct (Step 64). If not correct, the system 10 may again attempt to gather the correct billing information (Step 63). If billing information is correct the system may process the billing information (Step 65). If payment is to be made by credit card, the system 10 may pre-authorize the credit card purchase (Step 65). If payment information includes credit card billing information, before approving an order, the web server 13a may initiate an associated credit-card clearing house function for pre-authorization of the payment (funds may be reserved without actually charging the credit card). If payment has been validated (Step 66), the system 10 may then approve the order (Step 67). If payment has not been validated, the system 10 may determine whether a payment method problem exists (Step 66a). If so, the system

10 attempts to gather correct billing information (Step 63). Otherwise, the system 10 approves the order (Step 67).

It should be noted that other methods of accepting orders are available, such as
5 purchase orders, in lieu of credit card payments. In the case where a purchase order is used, the purchase order may be validated against an internal or an external database(s) at the billing information screen. Therefore, a user may not place an order without placing a valid purchase order number to the electronic printing system 10.

10 Printer specific files may be generated by the back end system, which will be described herein. These printer specific files may contain information such as what printer to send the file to and inventory codes that may be printer specific such as product, ink color, quantity, etc. When orders have been approved (Step 67), the electronic printing system 10 may stage the order (as printer specific files, such as
15 .BEP and image files) so that the order may be retrieved electronically by a remote printing facility.

In order to convert the design files into an image file that may be utilized by any remote printing facility (such as an encapsulated postscript file, EPS file), the
20 design files are processed by the electronic printing system 10. The process server 13d (see Fig. 1) may be configured to process orders received from the client 12 and output files that may be retrieved by a remote printing facility. Additionally, the process server 13d may track ship notifications and may update customers via email when their respective orders have been shipped. The process server 13d may also perform post-
25 authorization of orders.

Fig. 8 illustrates the operational flow of the process server 13d. Initially, the process server 13d may retrieve an order that may have been submitted by a client 12

and staged by the electronic printing system 10 in a staging directory resident on a file server 13e or resident in a database(s) 25. In retrieving the order, the process server 13d may access the staging directory or database(s) and locate a staged order and all associated files that may have been stored by the electronic printing system 10 (Step 5).

- 10 After the staged order has been retrieved by the process server 13d, the files are backed up (Step 71) and printer facility information may be added to the staged order (Step 72). This information may be determined at the time the user is designing the custom print order. After adding the printer facility information to the order, the process server 13d may split orders, for example, by printer facility (Step 73).

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Once a print order has been completed by the process server 13d, the process server 13d may modify the order in preparation for conversion of the design files to an image file (Step 74). For example, all non-printable information may be removed from the design files. The process server 13d may then determine product and printer facility information from the order file (Step 75), and parse the design files into an image file, such as an EPS file (Step 76), that may be utilized by a printer facility. The image file could be of any image-type format.

- 20 The parsing operation may be an automated back-end operation. Both spot printing plates and CMYK printing plates may be defined in the image file. Spot printing plates utilize a black background printing plate to which different color ink may be added in order to create a print. For example, in the case of a print order in which a business card having a green ink color portion thereon may be defined in a design files, the image file may specify a black background plate and a green ink preference or may be defined on a secondary information file. CMYK printing plates may use four separate plates, cyan, magenta, yellow and black, or a composite plate for full color printing. The CMYK printing information may be represented in separate

printing plates or as a composite plate. This information may be specified in the image file.

- Depending upon the product ordered by a customer and/or the designated
- 5 printer facility, the process server 13d may retrieve an order number associated with the order request and may create a printer specific file associated with the information that may not be included in the converted image file, such as product, paper color, media type, etc (Step 77). Printer specific files may include printer facility specific information, such as attributes and the like.

10

- The process server 13d may then add the user information to a user database(s) (Step 78) and may update an order database(s) with the user order information (Step 79). In the case of a warning flag occurring in creating the image file or in a case where the image file may include uploaded graphics, overlays and other check point formats, from a client 12, the image file may be printed and held for visual inspection so that a hard copy of the image file may be inspected (Steps 79a and 79b).

- 15
- The process server 13d may then backup all the printer specific files (Step 80) and compress them, such as by zipping the printer files, and copy the compressed files to an appropriate location so that the compressed files may be downloaded by a remote or local printer facility (Step 81) or stage to an EDI server on an order by order basis. The process server 13d may also include a backend module for tracking order ship status and for notifying customers of shipped orders. It should be noted that error checking is performed at every stage in the process (Step 82). Those files that result in 20 failures are placed on hold for correction at a later time.

A flowchart of the operational flow of the backend module is shown in Fig. 9. The backend module may receive ship notifications (Step 90). In particular, remote

printing facilities may notify the electronic printing system 10 of shipped orders using several notification methods. For example, in a case in which a printer facility may be non-automated, notifications may be made using an extranet. The extranet may be an Internet-enabled tool that may allow printing facilities to access a list of open orders.

5 The printing facility may then mark an order as shipped and provide a tracking number for the shipped product. This information may be accessed by the electronic printing system 10. Alternatively, an EDI system 130 may be included to facilitate the transfer of information between the printer facilities and the electronic printing system.

10 Alternatively, an automated printing facility may utilize a computer system resident within the facility that may be connected remotely to the electronic printing system 10 and generate data that may contain order numbers, shipping information, etc. The data may be accessed by the electronic printing system 10.

15 Returning to Fig. 9, after retrieving the ship notifications, the information may be backed up (Step 91) and the order database(s) may be queried (Step 92) to obtain an order record and any associated data. The order data may then be verified (Step 93) and in the case of an error, the error may be logged and the nonconforming order may be skipped (Step 93a). After obtaining the order record, a user's payment information
20 may be processed, for example, the user's credit card may be post-authorized (Step 94). The order database(s) may then be updated to reflect the shipped and post-authorization status and shipper/carrier and tracking information (Step 95). The customer may then be notified via email of a ship notification (Step 96).

25 It should be noted that in certain instances during the order process carried out by the process server 13d, errors may occur during one of the stages that may adversely affect the order being carried out correctly. In such a case, the order is corrected.

While the foregoing has been described with reference to particular embodiments of the invention, such as the design of coffee mugs, the invention is not limited to such products and may be applicable to any media. It will be appreciated by 5 those skilled in the art that changes in these embodiments may be made without departing from the principles and spirit of the invention.

WHAT IS CLAIMED IS:

- 1 1. An electronic printing system, comprising:
 - 2 a dedicated server, including:
 - 3 means for receiving custom print information;
 - 4 means for storing the custom print information in the dedicated server;
 - 5 means for providing a design interface so that the custom print
 - 6 information can be modified depending on a selected print medium;
 - 7 means for displaying the custom print information;
 - 8 means for formatting the custom print information and for generating a
 - 9 print order; and
 - 10 means for providing the formatted custom print information and print
 - 11 order to a printing facility;
 - 12 a remote server in communication with the dedicated server, the remote server
 - 13 having a plurality of information stored therein, at least a portion of the plurality of
 - 14 information provided to the dedicated server as custom print information; and
 - 15 at least one printing facility in communication with the dedicated server, the at
 - 16 least one printing facility configured to receive the formatted custom print information
 - 17 from the dedicated server and to process the print order in accordance with the custom
 - 18 print information.
- 1 2. The electronic printing system of Claim 1, wherein the custom print information is
- 2 provided from a client system in communication with the dedicated server.
- 1 3. The electronic printing system of Claim 1, wherein the custom print information is
- 2 provided from the remote server.

- 1 4. The electronic printing system of Claim 1, wherein the storing means comprises a
2 storage system resident on the dedicated server.

- 1 5. The electronic printing system of Claim 4, wherein the storage system comprises a
2 database.

- 1 6. The electronic printing system of Claim 4, wherein the storage system includes a
2 plurality of file structures therein, the plurality of file structures configured to maintain
3 a like plurality of information about the custom print information.

- 1 7. The electronic printing system of Claim 6, wherein the file structures comprise
2 records.

- 1 8. The electronic printing system of Claim 4, wherein the plurality of information
2 stored in the storage system includes any of customer personal information, shipping
3 information, customer billing information, order history information, order status
4 information, pricing information, printer specific information, store attribute
5 information, product attribute information, and custom design information.

- 1 9. The electronic printing system of Claim 1, wherein the design interface is
2 configured to dynamically display the custom print information so as to visually
3 indicate any modification to the custom print information in real-time.

- 1 10. The electronic printing system of Claim 1, wherein the custom print information is
2 formatted into a format that is recognizable by the at least one printing facility.

- 1 11. The electronic printing system of Claim 10, wherein the format is an image file
2 format.

1 12. The electronic printing system of Claim 11, wherein the image file format is an
2 EPS file format.

1 13. The electronic printing system of Claim 10, wherein the format is a textual file
2 format.

1 14. The electronic printing system of Claim 1, wherein the information stored in the
2 remote server includes any of graphical information, audio-visual information, image
3 information, and textual information.

1 15. An electronic printing system, comprising:
2 a dedicated server, including
3 at least one web server system configured to communicate with at least
4 one client system;
5 at least one image server system configured to receive custom print
6 information from a remote server and to provide the custom print information to the at
7 least one web server so that the custom print information can be dynamically displayed
8 to the at least one client system to indicate any modification to the custom print
9 information;
10 at least one file server system configured to store the custom print
11 information; and
12 at least one process server system configured to format the custom print
13 information and to generate a print order;
14 each of the at least one web server system, at least one image server
15 system, at least one file server system and at least one process server system being in
16 communication with each other so that custom print information can be provided
17 between them;
18 a remote server in communication with the dedicated server, the remote server
19 having a plurality of information stored therein, at least a portion of the plurality of
20 information provided to the dedicated server as custom print information; and
21 at least one printing facility in communication with the dedicated server, the at
22 least one printing facility configured to receive the formatted custom print information
23 from the dedicated server and to process the print order in accordance with the custom
24 print information.

1 16. The electronic printing system of Claim 15, wherein the information stored in the
2 remote server includes any of graphical information, audio-visual information, image
3 information, and textual information.

- 1 17. A method for creating a custom print design to be printed on a selectable print
- 2 medium, the method comprising the steps of:
 - 3 accessing a remote server to select from a plurality of custom print information;
 - 4 selecting a print medium for printing of the selected custom print information;
 - 5 and
 - 6 providing the custom print information, including information about the
 - 7 selected print medium, to a dedicated server configured to dynamically display the
 - 8 custom print information to indicate any modification to the custom print information.
- 1 18. The method of Claim 17, wherein the providing step includes:
 - 2 generating a default design file for the custom print information that includes
 - 3 design parameters associated with the custom print information;
 - 4 updating the design file to include any modification from the default design
 - 5 parameters;
 - 6 parsing the design file to render an image in accordance with the design
 - 7 parameters included in the updated design file; and
 - 8 dynamically displaying the rendered image to indicate any modification to the
 - 9 custom print information.

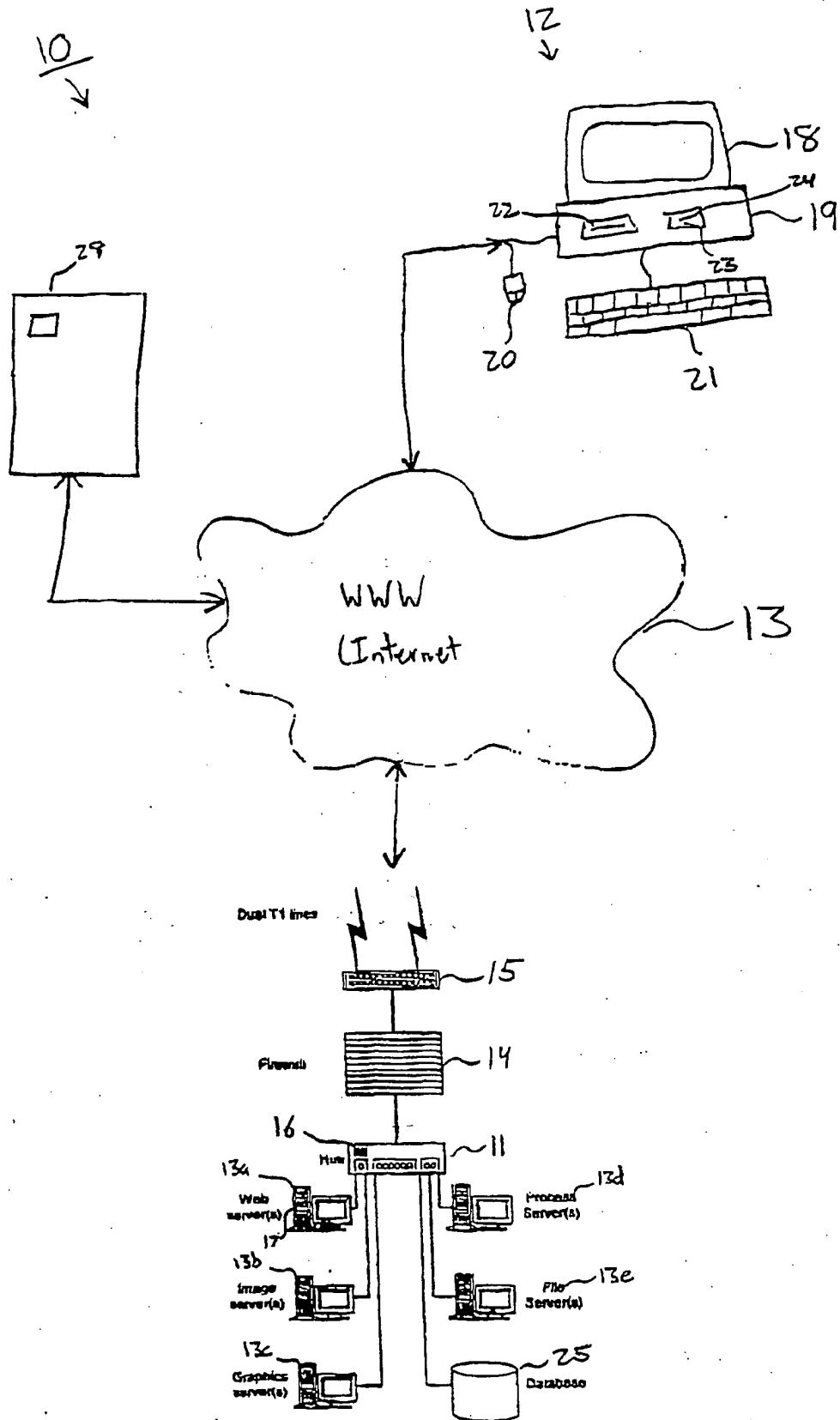
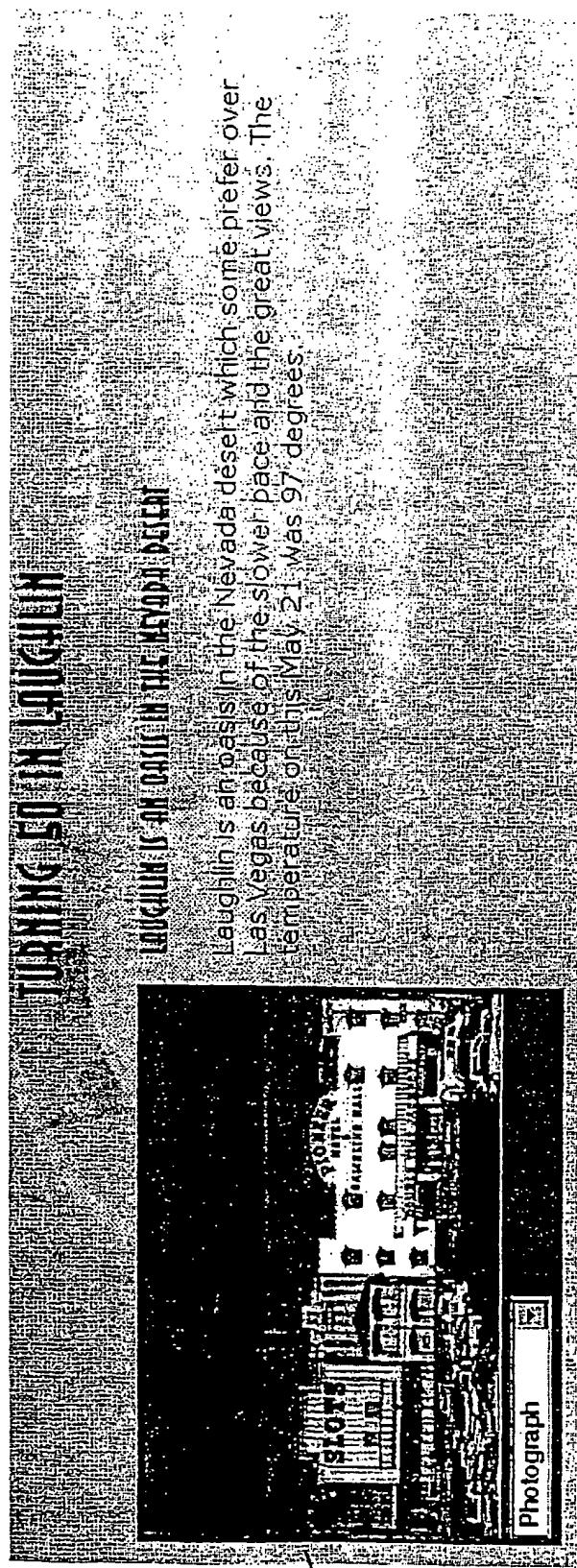


Fig. 1



40 ↗

Fig. 2

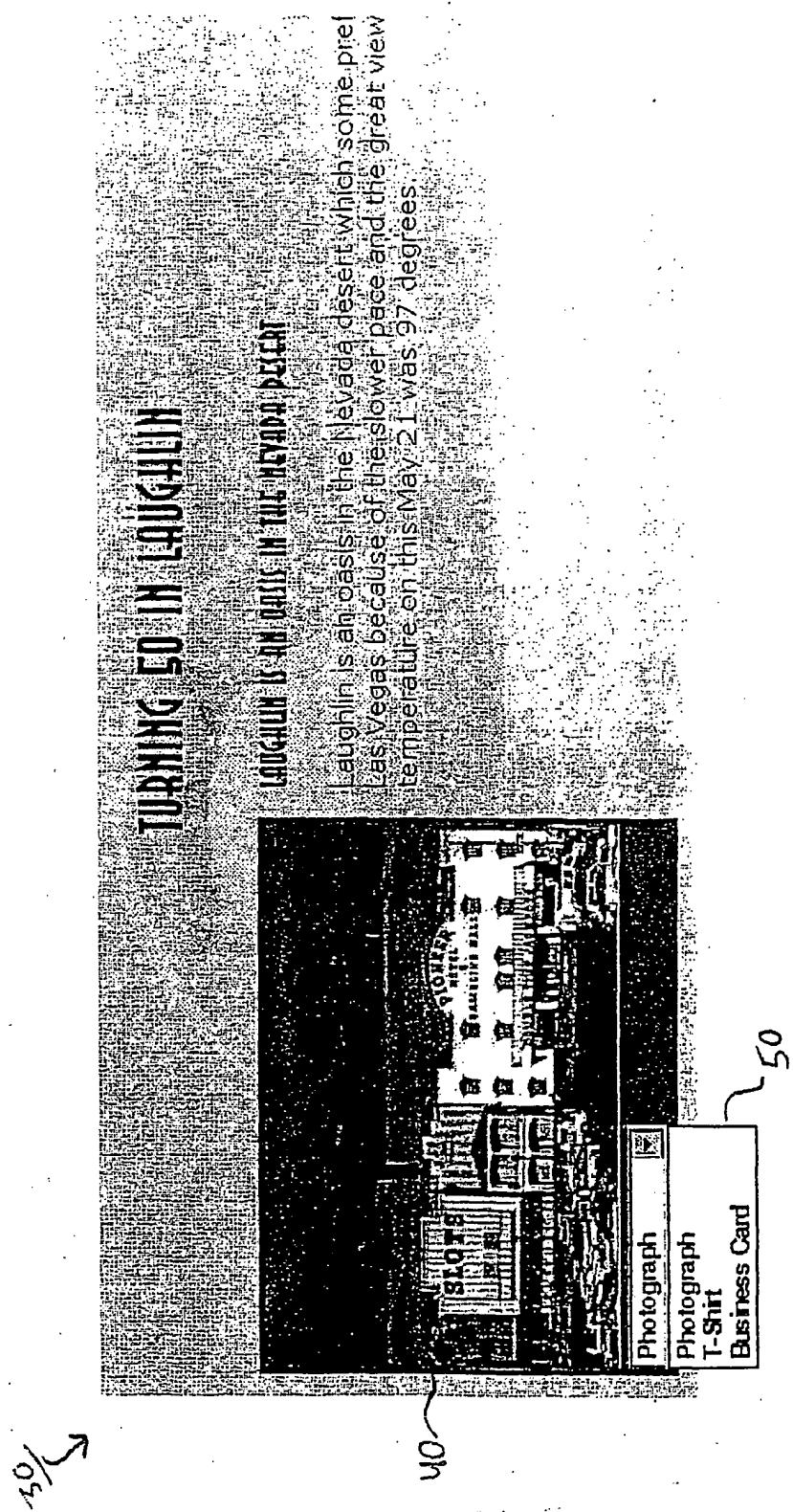


Fig. 3

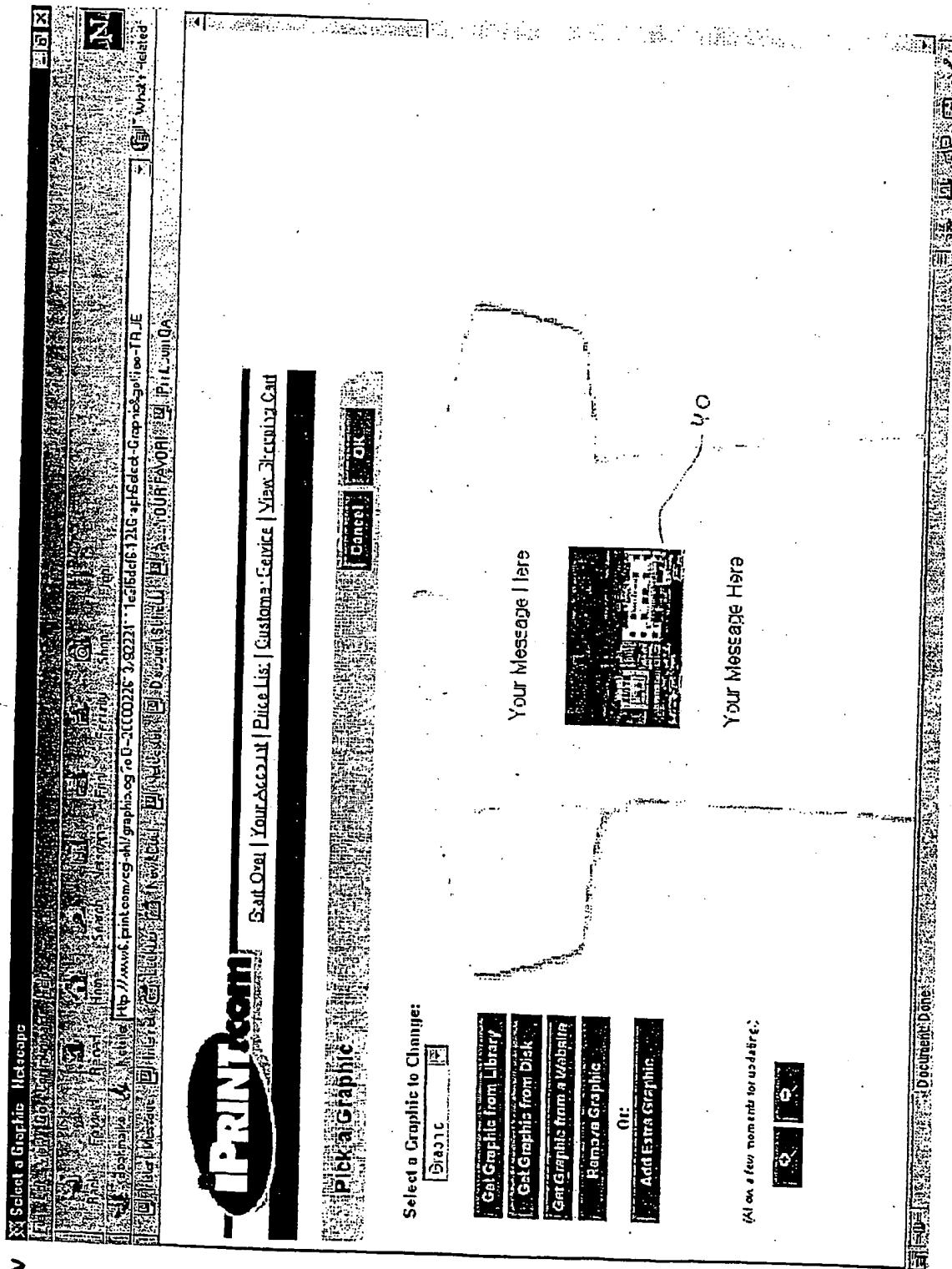


Fig. 4

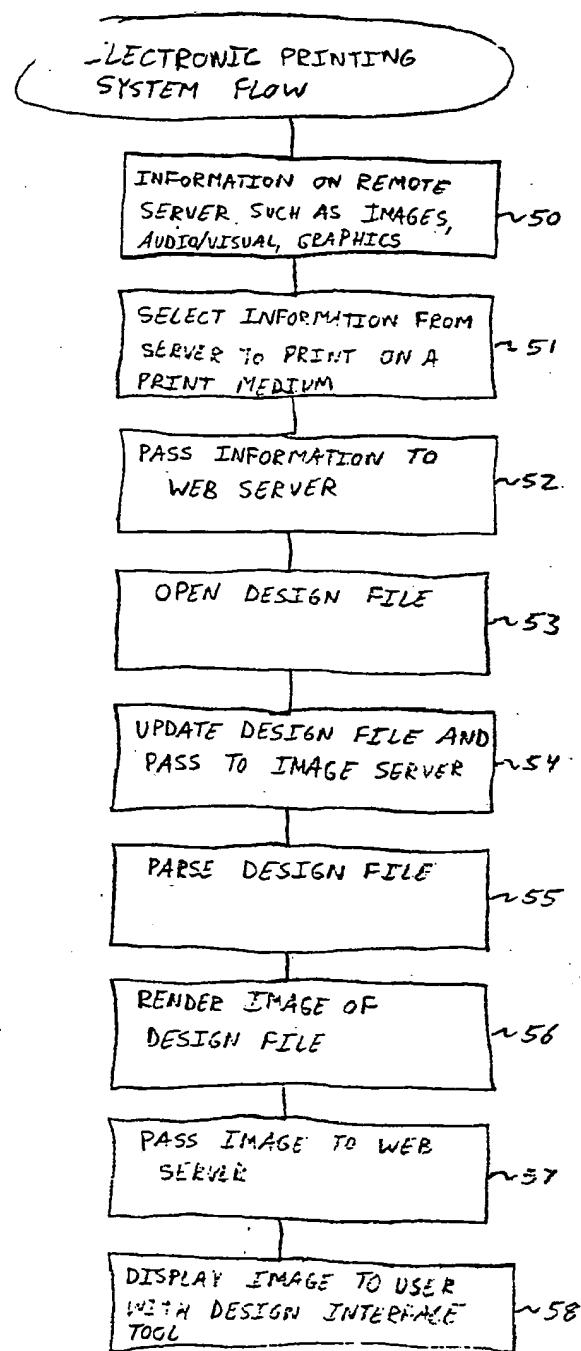


Fig. 5

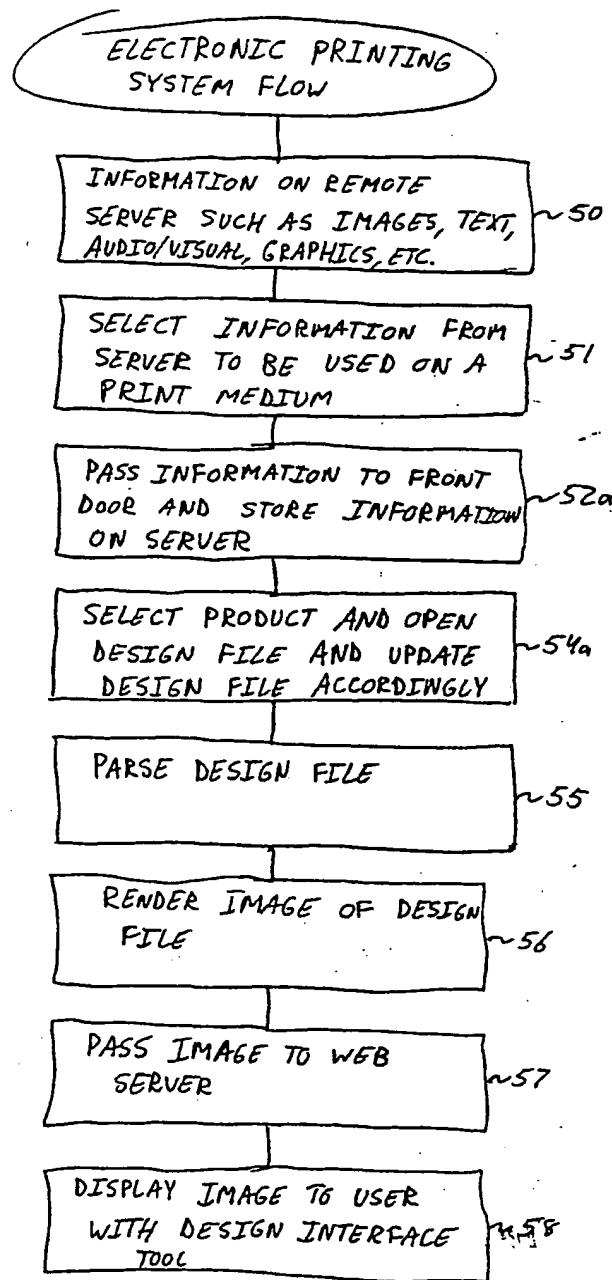


Fig. 6

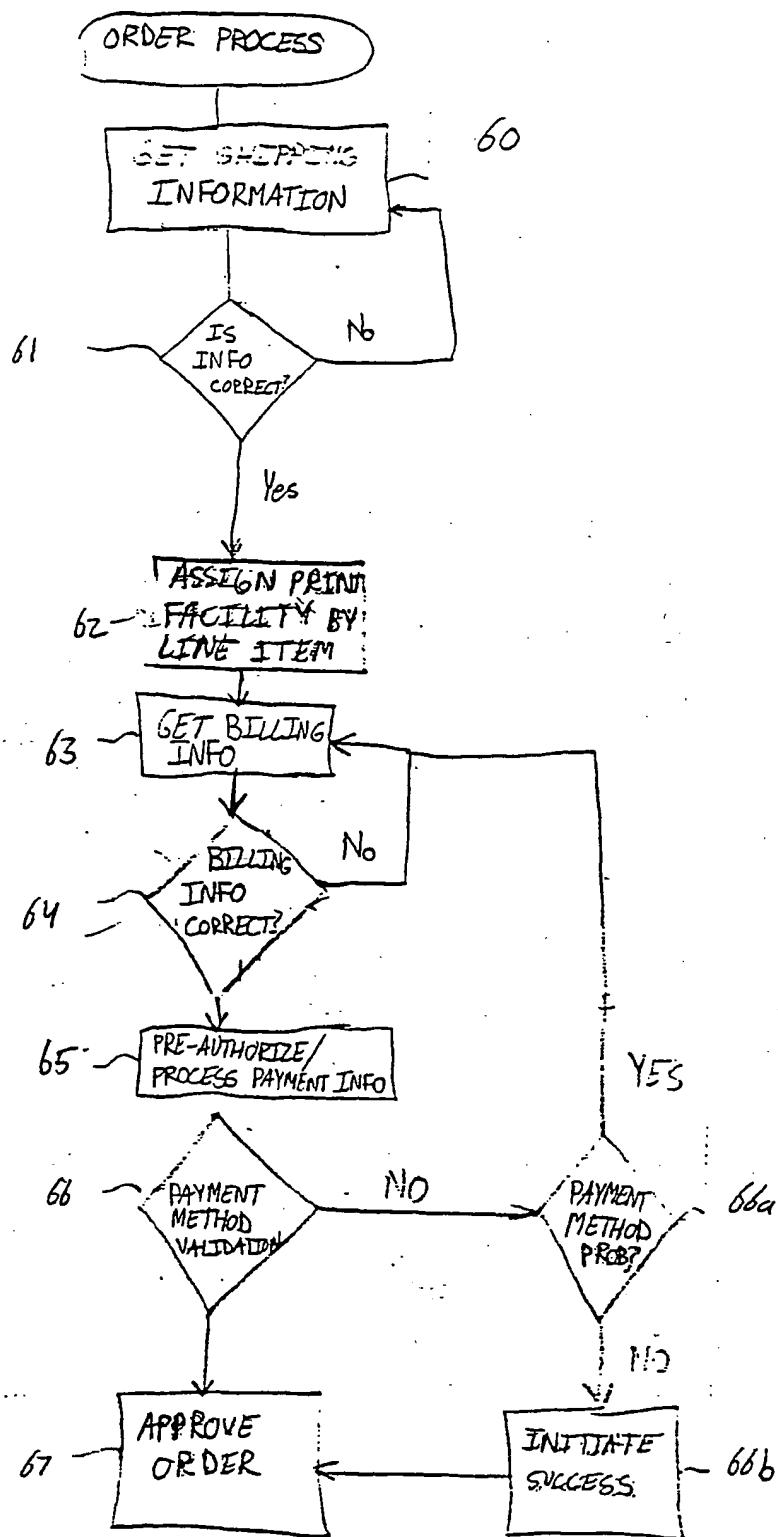
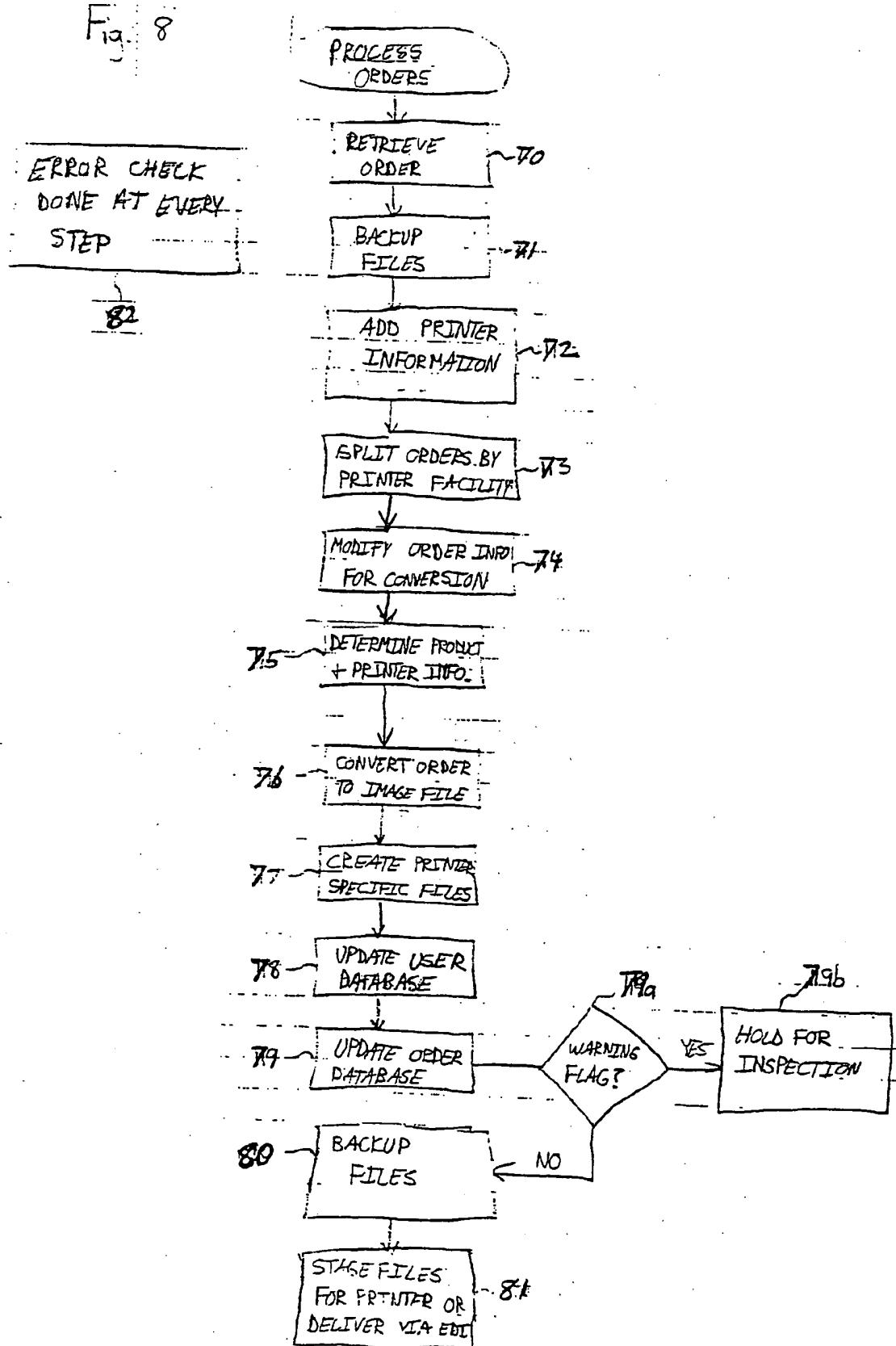
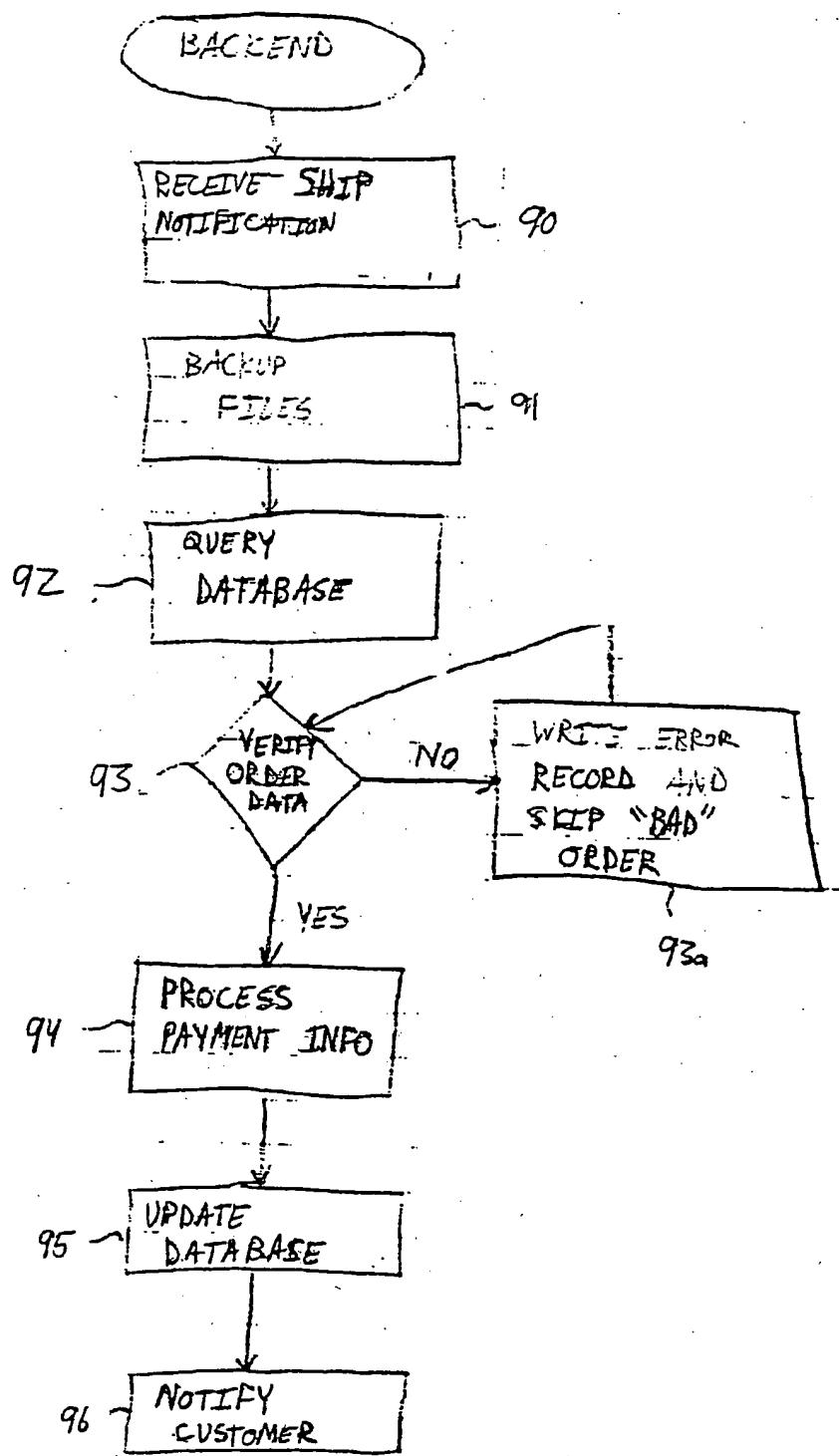


Fig. 8





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12
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/06868

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : B41B 15/00

US CL : 358/1.15

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 358/1.12, 1.15, 400, 500; 382/276; 709/200, 201, 202, 203

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A ----- Y	US 5,999,945 A (LAHEY et al) 07 December 1999, whole document.	1-14 ----- 15-18
A ----- Y	US 5,995,721 A (ROURKE et al) 30 November 1999, whole document.	1-14 ----- 15-18
A ----- Y	US 5,822,503 A (GASS, JR. et al) 13 October 1998, whole document.	1-14 ----- 15-18

 Further documents are listed in the continuation of Box C.

See patent family annex.

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A document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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Date of the actual completion of the international search

29 MAY 2001

Date of mailing of the international search report

28 JUN 2001

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/06868

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A ----- Y	US 5,594,840 A (SAHAY et al) 14 January 1997, whole document.	1-14 ----- 15-18
A ----- Y	US 5,469,533 A (DENNIS) 21 November 1995, whole document.	1-14 ----- 15-18
A ----- Y	US 6,018,338 A (GREULICH et al) 25 January 2000, whole document.	1-14 ----- 15-18
A,P ----- Y,P	US 6,125,372 A (WHITE) 26 September 2000, whole document.	1-14 ----- 15-18

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